



STATE OF TENNESSEE  
**DEPARTMENT OF ENVIRONMENT AND CONSERVATION**  
**State Revolving Fund Loan Program**  
L & C Tower, 8<sup>th</sup> Floor  
401 Church Street  
Nashville, TN 37243

**FINDING OF NO SIGNIFICANT IMPACT**

**Approval of Facilities Plan**

**Roane County (Roane County), Tennessee**

**Loan No. CW0 2011-285**

**March 17, 2011**

The National Environmental Policy Act requires federally designated agencies to determine whether a proposed major agency action will significantly affect the environment. One such major action, defined by Section 511(c)(1) of the Clean Water Act, is the approval of a facilities plan prepared pursuant to Title VI of the Clean Water Act. In making this determination, the State Revolving Fund (SRF) Loan Program assumes that all facilities and actions recommended by the plan will be implemented. The state's analysis concludes that implementing the plan will not significantly affect the environment; accordingly, the SRF Loan Program is issuing this Finding of No Significant Impact (FNSI) for public review.

Roane County has completed the facilities plan entitled "Sanitary Sewer Extension in the Post Oak Valley Drive Area and Keylon Drive Area for the Roane County, Roane County, Tennessee" dated December 2010. The facilities plan provides recommendations for improvements to the wastewater treatment system serving Roane County. This project includes the construction of a collection system extension in two unincorporated areas of Roane County that are currently served by failing septic systems. Treatment will take place at the existing Roane County Wastewater Treatment Plant. This project will extend sewer service to approximately 400 residential customers in Project Area "A", the Delozier Lane and Post Oak Valley Road area, and Project Area "B", the Keylon Drive, Swan Pond, and US HW-70 near the Clinch River area via the construction of approximately 44,775 linear feet (LF) of 8-inch diameter gravity sewer; 2,300 LF of 3-inch diameter force main; 1,950 LF of 4-inch diameter force main, 15 individual grinder pumps, 3 new pump stations, 1 pump station upgrade, 180 manholes, 1,000 LF of bore & steel-encased pipe, and ancillary construction items. The total estimated project cost is \$5,882,000. A Clean Water State Revolving Fund (CWSRF) loan in the amount of \$5,882,000 has been requested for this project. This project will be funded with a \$4,705,600 loan and \$1,176,400 in principal forgiveness that will not have to be repaid by Roane County.

Attached is an Environmental Assessment containing detailed information supporting this proposed action. Comments supporting or disagreeing with this proposed action received within 30 days of the date of this FNSI will be evaluated before we make a final decision to proceed.

If you wish to comment or to challenge this FNSI, send your written comment(s) to:

Mr. Sam R. Gaddipati, Environmental Manager  
State Revolving Fund Loan Program  
Tennessee Department of Environment and Conservation  
L & C Tower, 8th Floor  
401 Church Street  
Nashville, TN 37243

or call or e-mail (615) 532-0462 or Sam.Gaddipati@tn.gov.

## ENVIRONMENTAL ASSESSMENT

### Roane County (Roane County), Tennessee

Loan No. CW0 2011-285

March 17, 2011

#### **A. PROPOSED FACILITIES AND ACTIONS; FUNDING STATUS**

Roane County has completed the facilities plan entitled “Sanitary Sewer Extension in the Post Oak Valley Drive Area and Keylon Drive Area for the Roane County, Roane County, Tennessee” dated December 2010. This project includes the construction of a collection system extension in two unincorporated areas of Roane County that are currently served by failing septic systems. Treatment will take place at the existing Roane County Wastewater Treatment Plant. This project will extend sewer service to approximately 400 residential customers in Project Area “A”, the Delozier Lane and Post Oak Valley Road area, and Project Area “B”, the Keylon Drive, Swan Pond, and US HW-70 near the Clinch River area via the construction of approximately 44,775 linear feet (LF) of 8-inch diameter gravity sewer; 2,300 LF of 3-inch diameter force main; 1,950 LF of 4-inch diameter force main, 15 individual grinder pumps, 3 new pump stations, 1 pump station upgrade, 180 manholes, 1,000 LF of bore & steel-encased pipe, and ancillary construction items. The facilities planning area and project location are indicated on Figure Nos. 1, 1-A, 1-B and 2 of this Environmental Assessment. Descriptions of the proposed facilities and actions included in this project are listed below:

#### **FUNDING STATUS**

The facilities described above comprise the scope of Loan No. CW0 2011-285 scheduled for funding in fiscal year 2011. The estimated project costs are summarized in the following tabulation:

<u>PROJECT CLASSIFICATIONS</u>	<u>COSTS (\$)</u>
Administrative & Legal	20,000
Land Costs & Appraisals	170,500
Design Fees	246,500
Engineering Basic Fees	5,000
Other Engineering Fees	4,000
Resident Inspection	73,000
Construction	4, 875,500
Contingencies	487,500
<b>TOTAL</b>	<b>5,882,000</b>
CWSRF Loan	\$4,705,600
Amount Designated for Principal Forgiveness (Will not have to be repaid)	\$1,176,400

Roane County has applied for a \$5,882,000 Clean Water State Revolving Fund (CWSRF) loan. This project will be funded with a \$4,705,600 loan and \$1,176,400 in principal forgiveness that will not have to be repaid by Roane County.

#### **B. EXISTING ENVIRONMENT**

The Roane County’s Planning Area is located in Roane County in east Tennessee. A discussion of existing environmental features in the area includes the following:

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#### **SURFACE WATERS**

Surface waters within the proposed Planning Area include the Watts Bar Lake, which is formed from the confluence of the Tennessee, Clinch, and Emory Rivers, which is due south of the project. Post Oak Creek lies in the vicinity of the Project Area “A”, and King Creek is in the proximity to Project Area “B”. The Roane County Wastewater Treatment Plant (WWTP) has an existing discharge to the Watts Bar Lake. The Roane Central Utility District (RCUD) supplies drinking water to most of Roane County. RCUD purchases drinking water from the City of Rockwood which draws and treats water from Watts Bar Lake. The Rockwood Water Treatment Plant is located on Pompous Road in Rockwood, Tennessee.

#### **GROUNDWATER**

Ground water in Roane County occurs primarily in fractures in the underlying rocks. Drilled and dug wells and springs supply most of the rural population. Dug wells are most common in the thick residuum overlying the dolomite of the Knox group, but some have been dug in shale and along valley bottoms in alluvial material. There are numerous springs in Roane County, most of which yield less than 100 gallons per minute. These wells often go dry during periods of drought.

#### **SOILS**

Soil associations occurring in Roane County’s Planning Area include the Fullerton-Bodine, Wallen-Talbot & Montovello, and Litz-Sequoia Talbot. Soils in the Fullerton-Bodine Association consist of high and steep, well-drained cherty and clayey soils with dolomic lime stone. Soils in Wallen-Talbot & Montovello consist of steep ridges and rolling valleys with shallow to moderately deep excessively drained and well-drained, stony and clayey soils from sand stone, shale and lime stones. Soils in Litz-Sequoia Talbot consist of undulating and rolling, shallow to moderately deep, well-drained shaly and clayey soils from shale and lime stone.

#### **TOPOGRAPHY**

The Roane County’s Planning Area for Project Areas “A” and “B” lies the Ridge and Valley Physiographic Province of East Tennessee and is characterized by rolling hills, ridges, valleys, and numerous rivers and small streams.

#### **OTHER ENVIRONMENTAL FEATURES**

No wild or scenic rivers or unique agricultural, scientific, cultural, ecological, or natural areas were identified in the Roane County’s Planning Area.

#### **C. EXISTING WASTEWATER FACILITIES**

The Roane County’s wastewater treatment system consists of a 1 million gallon per day (MGD) WWTP. The WWTP was built in 1975, and was most recently upgraded in 2005. Unit processes include influent screening, aeration, clarification, and disinfection. Aerobic sludge digestion facilities along with a sludge filter press and sludge drying press were installed in 2005. Effluent is chlorinated in a contact basin prior to discharge to Watts Bar Lake (Tennessee River Mile 562.4). Roane County has an ongoing infiltration and inflow correction program.

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The WWTP is currently operated under the National Pollutant Discharge Elimination System (NPDES) Permit No. TN 0024473, that includes the following parameters and effluent limitations:

<u>PARAMETER</u>	<u>EFFLUENT LIMITATIONS</u>
CBOD <sub>5</sub>	30 milligrams per liter (mg/l)
Suspended Solids	30 mg/l
<i>E. coli</i>	126/100 colonies per milliliter
Dissolved Oxygen	1.0 instantaneous minimum
Chlorine Residual, Total	2.0 instantaneous maximum
Settleable Solids	1.0 daily maximum (milliliter/liter)
pH	6.0-9.0 (Standard Units)

The Roane County WWTP is operating within these parameters. There are three more WWTPs in the Planning Area. They are Harriman, Rockwood, and Kingston WWTPs. Roane County's collection system serves approximately 145 residential, 90 commercial and institutional, and 10 industrial customers. The system was put into operation in 1976. The initial system included the Industrial Park and Roane State Community College. The majority (80%) of the lines have been installed since the 1990's. There are approximately 9.5 miles of gravity lines and approximately 21 miles of force mains (pressure system). The pipe is primarily 85% Poly Vinyl Chloride (PVC) and about 15% Asbestos Cement Pipe (ACP). The collection system includes 10 pump stations, Septic Tank Effluent Pumping Systems (STEP) and several residential grinder systems.

#### **D. NEED FOR PROPOSED FACILITIES AND ACTIONS**

There were no official surveys conducted for failing septic systems, but there are reports of approximately 70 failing septic systems in the Roane County Project Areas "A" and "B". The County continues to get calls because of failing septic tanks in these areas. Public officials in Roane County are concerned about public health and the environmental condition in the vicinity of Project Areas "A" and "B". The proposed sewer service will enable Roane County to provide a safe sewer service and protect public health and environmental conditions.

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Existing and projected facility conditions are shown in the following table:

**EXISTING AND PROJECTED FACILITY CONDITIONS**

<u>POPULATION</u>	<u>EXISTING (2011)</u>	<u>PROJECTED (2031)</u>
Unincorporated Roane County	1,000	1,315
% Sewered	0%	50%
Planning Area Excluding Roane County	1,612	2,121
% Sewered	25%	50%
Total Planning Area	2,612	3,436
% Sewered	15%	50%

Roane County WWTP FLOWS Million

<u>Gallons per Day (MGD)</u>	<u>EXISTING (2011)</u>	<u>PROJECTED (2031)</u>
Domestic/Commercial	0.32	0.58
Industrial	0.06	1.08
Infiltration/Inflow (I/I)	0.08	0.12
<b>TOTAL</b>	<b>0.46</b>	<b>1.78</b>

The existing domestic/commercial flow of 0.32 MGD was based on the study conducted by Vaughn & Melton, consulting engineers for Roane County. The projected domestic/commercial flow of 0.58 for 2031 was based on adding 400 customers with this project and a growth of 21 customers each year for the next 20 years. The projected domestic/commercial future flows for 2031 are based on an approximate residential flow of 160,000 gallons per day (GPD) and commercial flow of 100,000 GPD. The future industrial flow of 1.08 MGD was based on the projections for the planned/proposed industrial park. The current I/I flow of 0.08 MGD is based on a study conducted by Vaughn & Melton. The projected I/I flow of 0.12 MGD for 2031 is based on the system being designed and constructed to minimize I/I. Prior to the planning of this Collection System Expansion project, Roane County had submitted an application to the Division of Water Pollution Control to increase the WWTP capacity to 2.0 MGD to accommodate the flows from a proposed industrial park planned as a joint venture by Cumberland, Morgan and Roane Counties.

**E. ALTERNATIVES ANALYSIS**

Several alternatives, including a “No-action” alternative, were evaluated for sewer service in the December 2010 facilities plan. A summary discussion of the evaluation of each alternative for sewer service and the selection of the recommended plan follows:

All the alternatives considered sewer line extensions in Project Areas ‘A’ and ‘B’. Project Area “A” would serve approximately 220 residences around Delozier Lane and Post Oak Valley Road.

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The majority of the customers in Area “A” will be served by gravity sewer. Several residences will require individual grinder pumps and force main sewers that tie into the gravity sewer. Customers on Glenwood Drive are proposed to be served by a gravity collection system that would convey sewage to a small pump station and force main sewer. Project Area “B” would be a gravity sewer system. New sewer lines would be installed in existing road right-of-way and future utility easements. All the considered alternatives would consist of installing approximately 44, 775 linear feet (LF) of 8-inch diameter gravity sewer, 2,300 LF of 3-inch diameter force main, 1,950 LF of 4-inch diameter force main, 15 individual grinder pumps, 3 new pump stations, and 1 pump station upgrade, 180 manholes, 1,000 feet of bore & steel-encased pipe, and ancillary construction items. Roane County plans to construct the project under two phases of work. Phase 1 will be constructed first to serve the Project Area “B”. Once complete, Phase 2 will be designed and constructed to serve Project Area “A” in order to maximize cost savings for the project area and diminish initial outlay of capital.

#### **NO ACTION**

The "No-action" approach was not a viable alternative. This will force the current residential customers in the planning area to continue utilizing septic tanks. They will continue to face the potential for environmental contamination by leaking or deteriorating septic systems. Septic tank installations are a probable source of contamination of streams and groundwater supplies. Therefore, some action must be taken to protect the environment and public health, and this alternative was rejected.

#### **COLLECTION SYTEM EXTENSION WITH CONNECTION TO THE ROANE COUNTY SEWER SYSTEM AND CITY OF KINGSTON SEWER SYSTEM**

This alternative consists of sewer line extension in Project Areas “A” and “B”. The sewage from Project Area “A” will be conveyed to the Roane County WWTP. The sewage from Project Area “B” will be conveyed to the City of Kingston WWTP. The Kingston WWTP is a 1.0 MGD capacity plant. This alternative would require an additional 5,140 LF 6-inch diameter of force main, including 1290 LF 6-inch diameter installed on a bridge over the Clinch River. This alternative was not the most cost-effective and was rejected.

#### **COLLECTION SYTEM EXTENSION WITH CONNECTION TO THE CITY OF ROCKWOOD SEWER SYSTEM AND CITY OF KINGSTON SEWER SYSTEM**

This alternative consists of sewer line extension in Project Areas “A” and “B”. In this Alternative, sewage from Project Area “A” would be sent to the City of Rockwood WWTP (with a capacity of 1.65 MGD), and the sewage from Project Area “B” would be sent to the City of Kingston WWTP. This alternative would require an additional 3,000 LF of 3-inch diameter force main, 12,500 LF of 6-inch diameter force main, and 2 pump stations for Project Area “A”. It would also require an additional 5,140 LF of 6-inch diameter force main, including 1,290 LF of 6-inch diameter force main installed on a bridge over Clinch River for Project Area “B”. This was not the most cost-effective alternative and was rejected.

#### **COLLECTION SYTEM EXTENSION WITH CONNECTION TO THE ROANE COUNTY SEWER SYSTEM**

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This alternative consists of sewer line extension in Project Areas “A” and “B”. This alternative would consist of installing approximately 44, 775 linear feet (LF) of 8-inch diameter gravity sewer, 2,300 LF of 3-inch diameter force main, 1,950 LF of 4-inch diameter force main, 15 individual grinder pumps, 3 new pump stations, and 1 pump station upgrade, 180 manholes, 1,000 LF of 4-inch diameter force main bore & steel-encased pipe, and ancillary construction items. In this alternative, the sewer collected from Project Areas “A” and “B” would be sent to the Roane County WWTP. The collected sewer from Project Area “A” would be tied into the existing gravity sewer approximately 1,600 feet southeast of the intersection of Post Oak Valley Road and Delozier Lane. Sewer collected from Project Area “B” would gravity flow to the low spot of Swan Pond Road, from where it would be pumped into a force main sewer and tied into an existing sewer near the intersection of Swan Pond Road and US Highway 70. All the sewer lines would be installed in existing road rights-of-way and future utility easements. This alternative was the most cost-effective and was selected.

#### **F. ENVIRONMENTAL CONSEQUENCES; MITIGATIVE MEASURES**

The environmental benefits of this project will be protection of public health and protection of the environment.

During the construction phase, short-term environmental impacts due to noise, dust, mud, disruption of traffic, runoff of silt with rainfall, etc., are unavoidable. Minimization of these impacts will be required; however, many of these minimization measures will be temporary and only necessary during construction. Using the following measures to prevent erosion will minimize impacts on the environment:

1. Specifications will include temporary and permanent measures to be used for controlling erosion and sediment.
2. Soil or landscaping maintenance procedures will be included in the specifications.
3. The contractor will develop an Erosion Control Plan. It will contain a construction schedule for each temporary and permanent measure controlling erosion and sediment. It will include the location, type, and purpose for each measure and the times when temporary measures will be removed or replaced.

These measures, along with requiring the contractor to return the construction site to as-good-as or better-than its original condition, will prevent any adverse impacts due to erosion.

#### **G. PUBLIC PARTICIPATION; SOURCES CONSULTED**

A Public Meeting was held on February 17, 2011, at 6:15 p.m., local time. The selected plan for wastewater collection and user charges were described to the public, and their input was received. This agency is not aware of any unresolved public objections that may have been voiced before or after the public meeting regarding this project.

The annual median household income for the Roane County is \$38,128.00. The current sewer user rate for the typical residential user (5,000 gallons per month) will increase from \$25.00 to \$31.50 per month on March 1, 2011. The total incremental annual cost for this project is \$78.00, which is approximately 0.20 percent of the current annual household median income.

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Sources consulted about this project for information or concurrence were:

1. Tennessee Department of Agriculture
2. Tennessee Department of Economic and Community Development (ECD)
3. Tennessee Department of Environment and Conservation (TDEC), Division of Air Pollution Control (DAPC)
4. Tennessee Department of Transportation (TDOT)
5. TDEC, Division of Groundwater Protection (DGWP)
6. Tennessee Historical Commission
7. TDEC, Division of Archaeology (DA)
8. TDEC, Division of Natural Areas (DNA)
9. TDEC, Division of Solid Waste Management (DSWM)
10. TDEC, Division of Water Pollution Control (DWPC)
11. TDEC, Division of Water Supply (DWS)
12. Tennessee Wildlife Resources Agency (TWRA)
13. United States Army Corps of Engineers (USACE)
14. United States Fish and Wildlife Service (USF&W)
15. Vaughn & Melton, Knoxville, TN (Engineering Consultants)
16. Roane County, TN